

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of :)
Change in §73.622)
DTV table of allotments)
For Station KYES-(TV))
Anchorage, Alaska)

**PETITION FOR RULEMAKING SEEKING
MODIFICATION OF §73.622 (B) TO REPLACE DTV CHANNEL 22 WITH DTV CHANNEL 6
AT ANCHORAGE ALASKA**

To; Mass Media Bureau

Herein, Fireweed Communications Corporation, Licensee of KYES-(TV), Channel 5, Anchorage Alaska seeks modification of the DTV Table of Allotments to change its present DTV channel allotment from UHF channel 22 to VHF channel 6.

Channel Modification Justification

PRESENT ALLOTMENT: A DTV change from UHF to VHF will allow KYES to provide 100 percent replication of NTSC analog service. The present allotment data for KYES is shown below¹.

Present Allotment

State CITY	NTSC Ch	DTV Ch	DTV Power (kW)	Antenna Height (m)	DTV Service (During Transition)		Service		Interference (During Transition)		Service Match (%)
					Area (sq. km)	People (thous)	Area (sq. km)	People (thous)	Area (% NL Area)	Population (% NL Pop)	
Alaska ANCHORAGE	5	22	1000.0	250.0	25716	265	30730	266	0.0	0.0	83.7

UHF KYES DTV service will only reach 83.7% of existing area. KYES presently operates with 100 kW ERP at 250 meters HAAT on channel 5. The DTV allotment is for 1,000 kW on channel 22. You will note there is **no** interference on channel 22. Also, power on channel 22 is contemplated at much higher power than on channel 5. Therefore, the **only** reason for reduced coverage can be higher propagation loss on UHF. Propagation of VHF signals on channels 5 and 6 will be nearly identical. Therefore, replication of 100% can be accomplished at VHF channel 6.

MARKET SIZE: Anchorage is a very competitive small TV market now hosting six commercial full power TV stations, and three LPTV stations², as well as one PBS affiliate. With only 300,000 persons in the Nielsen DMA, Anchorage may be the most competitive market in the US. As a result, stations in Anchorage may have less economic flexibility than other similarly sized markets hosting fewer stations. Limited resources could hamper development of a new DTV service. VHF is less expensive than UHF. Use of VHF channel 6 will enhance development of DTV service considering the limited financial resource available.

¹ From Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders, MM Docket No. 87-268, Adopted November 24, 1998.

² Here we refer to LPTV stations that do or can originate programming that can be seen on a conventional TV set. Those are KCFT-LP, K41DP and K18CS. Anchorage also hosts a UHF wireless cable system operating 17 UHF channels under LPTV licenses. Usually those operations are scrambled.

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TV INTERFERENCE: Maximum co-ordination distance for TV in §73.625 9 (a) is 273.6 kilometers. Outside of Anchorage, no U.S. full service television analog or digital operation, allotment or CP can be found within 273.6 kilometers of Anchorage on any TV channel. Canada is more than 273.6 kilometers distant from Anchorage. Interference from co-channel or adjacent channel operations is simply not a consideration. Change from channel 22 to channel 6 will cause no interference to any television station.

FM INTERFERENCE: See the FM Interference attachment. One station, KATB, will receive interference. That station has a translator co-located with KYES. Coverage of the translator exceeds the area of interference that at KYES digital operation could cause. Therefore, service of KATB will not be harmed.

LPTV DISPLACEMENT: K22AG is licensed in Anchorage. K22AG will be displaced by DTV channel 22. A DTV station in Anchorage on channel 6 will not interfere with channel 22 but might interfere with nearby LPTV or translator stations on channel 5 or 6. Only two channel 6 low power stations could be affected. Both are licensed to the petitioner. One channel 5 low power station, K05FW is licensed to the Anchorage PBS affiliate, KAKM to serve Girdwood, a community within the Anchorage Municipality. K05FW, is terrain shielded from channel 5. As it does not receive interference from present KYES operation, a new operation on channel 6 can not cause interference to K05FW. Except those stations owned by petitioner, a change from DTV channel 22 to 6 will eliminate all impact to LPTV.

ECONOMICS: Maximum permitted DTV power on channel 6 as found in 73.622 (6) (I) is 45 kW. 45 kW ERP systems are far less expensive than 1,000 kW systems. Additionally, the present KYES transmitter site has limited amount of single phase power available, and no three phase power. The cost of running in more power or three phase power to the site is prohibitive. Lower power VHF transmitters can more readily be made to run on single phase power, and use less of it. Cost of obtaining primary electrical power for high power UHF is not economically feasible even if the cost of a larger UHF transmitter were not a consideration.

COVERAGE: At 100 kW ERP and 250 meters HAAT the KYES 47 dBu grade B contour averages 99 kilometers from the transmitter. With 1,000 kW DTV UHF the service contour will be 89.2 km distant. Using channel 6 DTV, at 45 kW ERP, the service contour will be 118.3 km distant. DTV coverage on channel 6 will be superior to that on channel 22.

According to Appendix B, DTV Table of Allotments (in the Second memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders in MM Docket No. 87-268) KYES presently serves an area of 30,730 sq. kilometers. The next best Anchorage station is KTUU with 28,907. It is significant that KYES serves 1,823 sq. km. not served by any other TV station. Granting this petition will allow KYES to provide the first and possibly the only DTV service to residents living in what will otherwise be white area.

PRINCIPAL COMMUNITY COVERAGE: §73.625 requires the location of the antenna must be so chosen that there is not a major obstruction in the path over the principal community to be served. Terrain within the Municipality of Anchorage is so rugged no transmitter can be located where it can have line of sight to all of the community. This is especially true of the KYES site. VHF propagation is better able to serve in rugged terrain, thus compliance with 73.625 will be better using low band VHF frequencies.

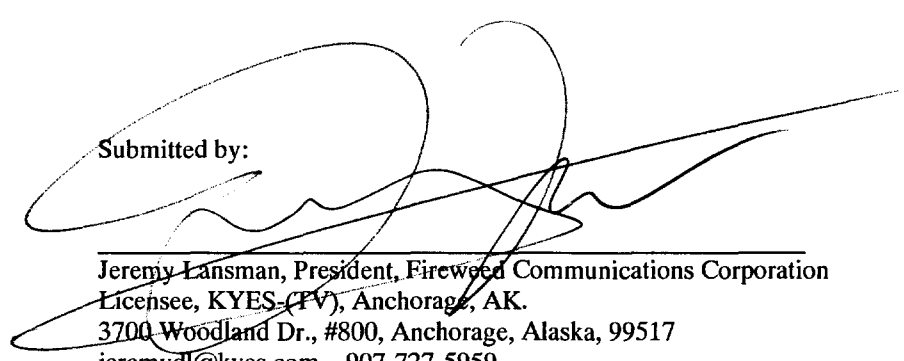
CONCLUSION: Granting this petition will allow KYES to provide improved DTV to a larger area at lower cost with no interference to any other full service TV or LPTV broadcaster. Therefore grant of this petition is in the public interest. Therefore, for the reasons set forth above, we respectfully request change in § 73.622, the DTV Table of Allotments, from:

Alaska
Anchorage 18, 20, 22, *24, *26, 28, 30, 32

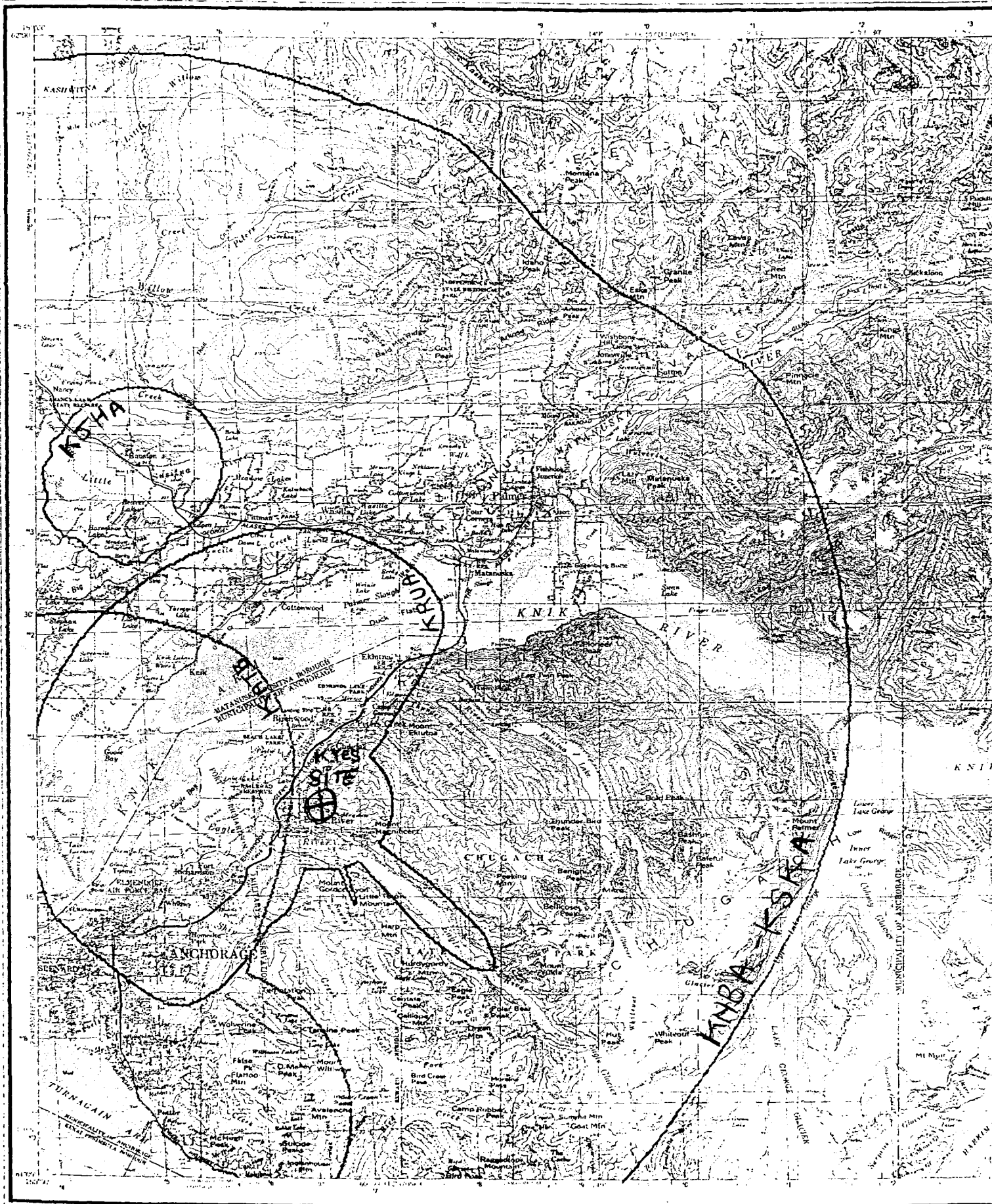
To:

Alaska
Anchorage 6, 18, 20, *24, *26, 28, 30, 32

Submitted by:



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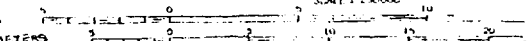
CONTAINS 10 SHEETS, 100,000 SCALE

COMPILED IN 1965 FROM U. S. GEOLOGICAL SURVEY 1:50,000 SCALE MAPS, AND ANCHORAGE AND VICINITY 1:25,000 SCALE MAPS, SURVEYED 1940, 1942, 1943, 1944, AND 1945. REVISIONS IN PART FROM AERIAL PHOTOGRAPHS TAKEN IN 1970 AND 1971. PURPLE SHADING INDICATES GLACIAL FEATURES. FEATURES MARKED WITH GLACIAL ADVANCE ON REVISION, WHILE AS OF THE DATE OF PHOTOGRAPHY. MAP NOT FIELD CHECKED.

SHADINGS AS PORTRAINED, INDICATE ONLY THE BETTER AREA, USUALLY OF LOW RELIEF, AS INTERPRETED FROM AERIAL PHOTOGRAPHS. LAKE ELEVATIONS ARE UNCHECKED.

FEDERAL RESERVATION BOUNDARIES ESTABLISHED BY THE ALASKA NATIONAL INTEREST LANDS CONSERVATION ACT, PL. 96-487, DEC. 2, 1979 ARE SHOWN AS COMPILED BY THE ADMINISTRATION AGENCY.

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KILOMETERS



CONTOUR INTERVAL 200 FEET

FM INTERFERENCE STUDY

The attached coverage maps show the 60 dBu, protected contours for KRUA, (green), KJHA (blue), KATB (red), KNBA (red) and KSKA (Yellow). No other FM station had a protected contour close enough to consider herein.

The stations considered are:

Call	Community	Freq.	ERP kW	HAAT	IERP dBm	Desired Field dBu	Interfer Radius meters	Comment
KRUA	Anchorage	88.1	.15	229	25.55	n/a	n/a	Co-located
KATB	Anchorage	89.3	4.9	202	16.2	60	7.25k	S. Anchorage (has xlator)
KNBA	Anchorage	90.3	100	229	4.7	84.5	227	Goose Bay
KSKA	Anchorage	91.1	100	218	-4.5	84.1	82.4	Goose Bay

The method used to analyze interference to each NCE FM station was to determine the noise power a maximum power DTV station on channel 6 would radiate if the DTV station out of channel RF mask were at the maximum allowed under FCC rules. We can assume the undesired DTV signal is an undesired FM station. If we find the signal strength of the desired FM station at the KYES site we can compute the approximate distance to which our hypothetical DTV station can cause interference.³

We used 45 kW ERP (§73.622 (g)) for the DTV station. Then we applied the emission mask limits (§73.622 (h)(1)) to determine power in a bandwidth of 500 kHz centered of the frequency of the FM station as provided for in the rules. FM broadcast channels have a bandwidth of 200 kHz. To account for the difference between 500 and 200 kHz we subtracted 3.98 dB to find the DTV noise power within the FM channel. Protection to a desired FM station from an undesired FM station requires the undesired be 20 dB or less field strength than the desired. In the table above is listed the radius in meters if the hypothetical undesired DTV free space field strength is 20 dB⁴ less than the desired FM field strength, except for KATB where we used F (50/10) field strength.

The table above shows the result of our calculations. IERP is the DTV equivalent ERP in the FM channel. The 60 dBu contour for KJHA does not come near the KYES site and was not considered in the above table.

KRUA is co-located with KYES. The undesired signal from a DTV channel 6 could be no higher than 25.55 dBm, or .36 watts. KRUA is licensed at a power of 150 watts ERP, or 51.76 dBm. Therefore the undesired signal is 26.21 dB below the desired, well in excess of the minimum 20 dB ratio required to prevent interference. As the stations are co-located, the ratio shown will apply throughout the KRUA coverage area.⁵

KATB's 1 mV/m contour does not encompass the KYES site. The hypothetical DTV ERP might get as high as .0417 watts ERP within the KATB FM channel. The hypothetical DTV 40 dBu f50/10 contour extends 7.25 km from the KYES site. This interference encroaches on the KATB protected 60 dBu contour.

³ We note there are no standards defining interference between DTV channel 6 and NCE FM stations. Since the power of a DTV signal looks more like noise, it should be expected that interference from a co-channel DTV signal should be a bit less than from a co-channel FM station, all other things being equal. We believe use of FM-FM protection is conservative, and is a simple method to evaluate potential interference. We do not suggest this method to be definitive.

⁴ See §73.509, NCE Prohibited Overlap.

⁵ It could be noted that KYES uses a directional antenna, and that both KRUA and KYES have similar vertical antenna aperture. It should be expected that KRUA will have even better ratios in most directions to a channel 6 DTV signal using the KYES antenna for transmission.

KATB owns an FM translator co-located at the KYES site. The translator, K206AO on 89.1 MHz is licensed for an ERP of 46 Watts or +46.6 dBm. The proposed DTV interference signal would be 18.5 dBm ERP, against the K206AO 46.6 dBm ERP. The DTV signal is 28.1 dB below the desired signal. There is no interference to K206AO. The K206AO HAAT is almost identical to that of KYES, so its 1 mV/m service contour extends out an average of 13.4 km. Even if the DTV operation interfered with KATB, it would not interfere with the KATB translator. There will be no interference to its translator which can fill in any service area lost to KATB.

KNBA operates with 100 kW ERP from a site 21.5 km from the KYES site. KYES is on a 90 degree radial from KNBA. Using f (50/50) field charts we find KNBA has an 84.5 dBu field strength at the KYES site. A DTV channel 6 signal operated with maximum allowed ERP with maximum allowed out of channel emission will radiate 4.7 dBm within KNBA's channel. DTV operation can cause interference out to a radius where the DTV signal falls to 20 dB below that of KNBA. Therefore the interfering DTV contour will be 64.5 dBu. Using free space field calculations, the worst possible case, DTV interference will extend for a radius of only 227 meters from the KYES site.

KSKA operates with 100 kW ERP from the same site as KNBA. Using f (50/50) field charts we find KSKA has an 84.1 dBu field strength at the KYES site. A DTV channel 6 signal could radiate -4.5 dBm within KSKA's channel. DTV radiation can cause interference out to a radius where it is 20 dB or less than that of KSKA. $84.1 - 20 = 64.1$ dBu. Using free space field calculations, the worst possible case, DTV interference 64.1 dBu contour might extend for a radius of only 82.4 meters from the KYES site.

It should be noted that the KYES site is on a remote and elevated mountainous location. The signals from KNBA and KSKA can be expected to be much greater than those predicted by the F (50/50) charts. Few homes can be found near the transmitter site.

In conclusion, no interference will be caused to any FM station except for KATB, and that KATB has a translator that already provides replacement service to any area that a DTV signal might affect.